Message

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Sent: 4/21/2017 8:03:20 PM
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Subject: MHB stratification
Attachments: deacutis_etal_2006.pdf

Hi All,

The attached paper by Chris Deacutis et al. (2006) suggests that in 2001 & 2002, the pycnocline in Narraganset Bay in August was at about -3 m. The authors had trouble finding stratification in Mt Hope Bay but did find hypoxic areas at about -5 m in the deeper part (channel) of the bay and near the Fall River CSO outfalls. I'm guessing that the Taunton River outflow plus the sweeping nature of the Brayton Pt Station thermal plume at this time kept the shallow (< 6 m deep), western portion of MHB fairly well mixed, and thus no stratification or pycnocline.

There is also a bunch of DO and other data in this document that I found useful.

Also, NOAA chart 13226 gives a good overview of the study area and depth http://www.charts.noaa.gov/OnLineViewer/13226.shtml.

Thinking more about what Ben recommended the other day, I think it is reasonable to have an "open water" class (i.e., above the pycnocline) with both benthic and pelagic components as well as a "deep" (below the pycnocline) class with both benthic and pelagic components. This way we can capture the swimming species in shallow and deep water, and the burrowing/crawling/bottom-tending species in both shallow (closer to the bay's and river's banks) and deep water (in the channel). In this proposed scenario, some species will be in multiple areas. For example, quahogs could be found in "open water benthic" and "deep benthic areas," where "deep benthic" might put them more at risk of low DO in summer. I think within our study area, "open water pelagic" and to some extent "deep water pelagic" would capture anadromous species such as smelt, shad, and river herring.

Todd